

**OPTICAL COMMUNICATIONS USING MULTIPLE HETERODYNE DETECTORS****ABSTRACT OF THE DISCLOSURE**

An optical communications system includes a receiver subsystem with at least two heterodyne receivers. The receiver subsystem receives a composite optical signal having two or 5 more subbands of information and corresponding tones. An optical splitter splits the composite optical signal into optical signals. Each optical signal includes a subband(s) and corresponding tone. Each heterodyne receiver receives an optical signal. The receiver includes a heterodyne detector coupled to a signal extractor. The heterodyne detector mixes the optical signal with an optical local oscillator to produce an electrical signal which includes a frequency down-shifted 10 version of the subband and the tone of the optical signal. The signal extractor mixes the frequency down-shifted subband with the frequency down-shifted tone to produce a frequency component containing the information.

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